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REVIEW OF THE CURRENT SITUATION AND OUTLOOK FOR IRON ORE - 1994

Report by the UNCTAD secretariat

This report describes developments in the world iron ore market in 1993 and in the first half of 1994. The main purpose of the report is to stimulate an exchange of views on the current situation and outlook for the international iron ore market. Detailed statistics appear in the document entitled "Iron Ore statistics 1986-1993" (TD/B/CN.1/IRON ORE/12) prepared by the UNCTAD secretariat.

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I. OVERVIEW AND SUMMARY

1. Recovering from a weak 1992, the world market for iron ore resumed growth in 1993. Stimulated by the buoyant steel demand in China as well as in the newly industrializing countries of Asia, world iron ore trade recorded a vigorous upturn last year when total exports rose by nearly 8 per cent reaching 398 million tons. Thanks to the strong demand for imported ores in fast developing regions, major iron ore suppliers reported substantial pressure on world shipping schedules and a marked reduction of stocks, particularly during the second half of the year, despite the slowdown of the Japanese and European economies. However, given the pressure exerted by leading consumers on one hand, and strong competition among suppliers on the other, iron ore prices continued to fall sharply in 1993, and more recently in 1994 they went further down. This did not prevent the iron ore industry from pursuing investments in capacity replacements and additions, cost reduction, and environmental management programs.

2. Globally, the level of iron ore output increased by 2.5 per cent reaching 942 million tons in 1993, despite the sharp drop in mining and steel activities in the former USSR. Undoubtedly, the boom of the Chinese economy greatly contributed to the revival of the world steel and iron ore markets in 1993. This resulted from the combination of two inter-related factors: (i) the impressive growth of steel imports into China, which exceeded 30 million tons in 1993, and contributed to increasing steel output in all major steel-exporting countries, and (ii) the ever-increasing level of Chinese iron ore imports, 30 per cent higher than in 1992 placing China as the most dynamic market for current and future iron ore demand. Another positive development was the further expansion of steel output and iron ore demand in developing countries. In Asia and Latin America, economic and trade performance improved in response to more appropriate domestic policies which are attracting capital inflows and stimulating investments.

3. Conversely, the adverse effects of the "structural recession" were felt in most developed market-economy countries throughout 1993. The long-awaited economic recovery had not materialized, although the turning point of the economic cycle was approaching. The slowdown of economic growth and higher interest rates lowered investments and increased public deficits leading to an unprecedented level of unemployment, particularly in Europe. As a result, steel demand contracted in most OECD countries, while their steel trade balance improved owing to higher exports of steel products to China. In the transition economies of Central and Eastern Europe, the recession started to bottom out mainly in Hungary and Poland, but in the CIS States, particularly in the Russian Federation and Ukraine, the slump of the steel market deepened.

4. During the first half of 1994, world iron ore trade remained strong. Demand in China was growing even faster than in 1993, declines in Japan were less pronounced than expected, and business recovery was accelerating iron ore consumption in all other regions, except in the CIS. These favorable market conditions are likely to continue throughout the remainder of 1994, and 1995 will probably see a significant upsurge in global steel and iron ore demand reflecting greater activity in major steel consuming sectors in Europe and Japan and the steady growth in China and fast developing regions. This more positive environment augurs well for the recovery of iron ore prices and active iron ore trade transactions in 1995.

II. FACTORS INFLUENCING IRON ORE DEMAND

5. In 1993, world apparent consumption of iron ore increased to 928 million tons, bringing back the international iron ore market into a more balanced supply/demand situation. Iron ore demand rose in most regions since production of both crude steel and primary iron slightly exceeded the level of 1992. Demand for all iron ore products remained steady. Supply of pellets and lumps were particularly tight as a result of the rising demand from DRI plants on the one hand, and of the growing interest from blast-furnace steelmakers for direct-charge ores due to the increased costs of production for sintering on the other hand. By the end of the year, the market for fines was also firm reflecting the overall demand situation, in particular the higher tonnages exported to China and other Asian countries.

Table 1
Apparent consumption of iron ore
(million tons)

Regions or Countries	1986	1989	1991	1992	1993	1993/92 Change %
Developed Countries	357.6	390.0	380.0	355.0	334.4	-5.8
of which:						
EU	134.9	148.9	134.4	126.4	115.3	-8.8
Japan	115.5	128.0	127.2	113.7	114.5	0.7
USA	51.9	63.1	64.8	62.4	64.6	3.5
Developing Countries	131.1	142.9	152.6	161.2	170.9	6.0
of which:						
Asia	56.4	68.3	83.6	88.6	95.0	7.2
Latin America	57.4	59.6	58.0	62.3	69.3	11.3
Africa	9.3	8.2	7.3	8.0	5.8	-27.7
Eastern Europe	267.5	257.1	204.1	174.5	154.2	-11.6
of which:						
CIS	203.8	201.4	171.5	148.0	124.7	-15.7
Socialist Asia	161.2	184.3	203.9	231.3	268.4	16.0
of which:						
China	152.7	174.6	193.7	221.1	257.7	16.6
World Total	**917.4**	**974.2**	**940.7**	**922.0**	**927.9**	**0.6**

Source: UNCTAD secretariat.

6. The forces behind this recent market upturn for iron ore are described below:

A. Steel developments

7. The disturbing events which affected the steel industry in 1993 were the sharp acceleration of job losses in the sector and the deteriorating financial position of most traditional steel companies. However, the final picture of the world steel market in 1993 was less gloomy than predicted. World crude steel

production slightly increased to 725 million tons. The volume of steel trade increased strongly and world steel prices rose in 1993, a trend which is continuing in 1994. Regionally, crude steel output in 1993 only declined in the former USSR and Africa. Figures for the first half of 1994 show that putting apart the CIS, world crude steel production is further increasing despite the slide of steel output in Japan.

Table 2
Steel production by major producing countries, 1986-1993
(million tons)

Country	1986	1989	1991	1992	1993	1993/1992 Change %
1. Japan	98.3	107.9	109.6	98.1	99.6	1.5
2. Former USSR	160.5	160.1	132.7	116.8	95.7	-18.1
3. China	52.2	61.4	70.4	80.0	89.5	11.9
4. USA	74.0	88.9	79.7	84.3	88.8	5.3
5. Germany*	37.1	41.1	42.2	39.7	37.6	-5.3
6. Rep.of Korea	14.6	21.9	26.0	28.1	33.0	17.4
7. Italy	23.0	25.2	25.1	24.9	25.7	3.2
8. Brazil	21.2	25.0	22.6	23.9	25.1	5.0
9. India	12.2	14.6	17.1	18.1	18.1	0
10. France	17.7	18.7	18.4	18.0	17.1	-5.0
World Total	**711.3**	**784.8**	**732.1**	**718.1**	**725.5**	**1.0**

Source: UNCTAD and the International Iron & Steel Institute (IISI).
* From 1991 onwards, unified territory.

8. In developed market-economy countries steel output started a modest recovery in 1993, which helped to maintain the level of iron ore demand. In Japan, despite the softening of the economy followed by a weak domestic steel demand, exports mainly to China supported the level of Japanese steel output. Crude steel production in Japan was in 1993 1.5 per cent higher than in 1992, coming close to the 100 million tons level. After the disintegration of the former USSR, Japan became the world largest steel producing country and remains the biggest iron ore importer. However, the major problem of the Japanese steel industry has been the strong yen which is not only affecting its competitiveness, but has also been provoking a gradual reallocation of manufacturing industries to lower-cost producing countries. For automotive and electronics the transfer of Japanese plants to overseas, particularly to neighboring South-East Asian countries is already a fact. This process is changing the current patern of world trade and investment, not only for iron ore and steel products but also for manufactured goods.[1]

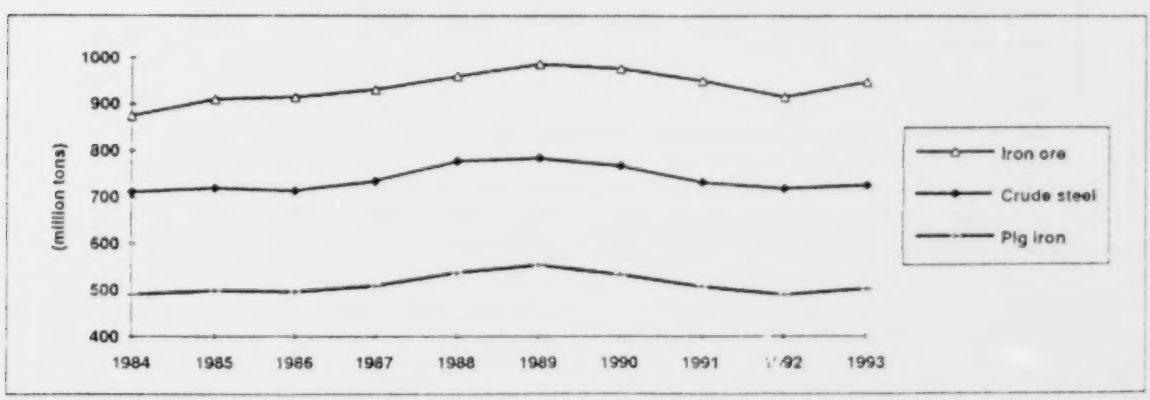
9. In the European Union - the major regional market for imported ores - a new wave of restructuring including mergers and cuts of steel capacity vigorously started in 1993, but is decelerating in 1994. The EU's level of crude steel output remained virtually unchanged in 1993 at 132 million. Declines in Germany

and France were offset by increases in the United Kingdom, Italy, Spain and the Netherlands. However, as a result of drawdowns from stocks, the annual level of EU's demand for imported iron ore declined by 6 per cent to 111 million tons in 1993. During the first half of 1994, however, due to the strengthening of the German economy, steel production in the EU was already 3 per cent higher. In Eastern European countries other than the former USSR, recession continued but steel production is gradually stabilizing at 30 million tons. In the CIS, the economic situation has worsened while production costs rose sharply affecting crude steel output which fell by more than 20 million tons in 1993, reducing severely iron ore demand in the region.

10. Asia, excluding Japan, became the most promising market for iron ore. China became in 1993 the third largest steel producing country with an annual output approaching 90 million tons. Significant increases in steel production also occurred in the Republic of Korea and Taiwan province of China. Mention should also be made of the potential for higher production of direct reduced iron and steel products in South East Asia, namely in Indonesia, Malaysia, Thailand, and Viet Nam. The Philippine has already one of the world largest sintering plants. The Middle-East is another region where steelmaking, is growing fast mainly in Turkey and Iran. Furthermore, thanks to the huge reserves of natural gas, DRI capacity is growing rapidly in this region: DRI is currently produced in Saudi Arabia, Qatar, Libyan Arab Jamahiriya, Egypt, Islamic Republic of Iran and Iraq, while Bahrain supplies DR-pellets to the region.

11. In the Americas, recovery was already under way in 1993 and has become more visible so far in 1994, stimulating domestic demand and the activity of the main steel-consuming sectors. In response to the 5 per cent increase in crude steel output in the United States, North American iron ore shipments increased by 2 per cent in 1993, and have grown further in early 1994. Latin America also experienced positive steel developments; privatization, liberalization and regional integration enhanced the potential of the iron and steel industry in this region where crude steel output grew by 5 per cent in 1993, a level which was maintained in the first half of 1994, accelerating the pace of regional iron ore demand.

Chart I: World Production of crude steel, pig iron and iron ore
(million tons)

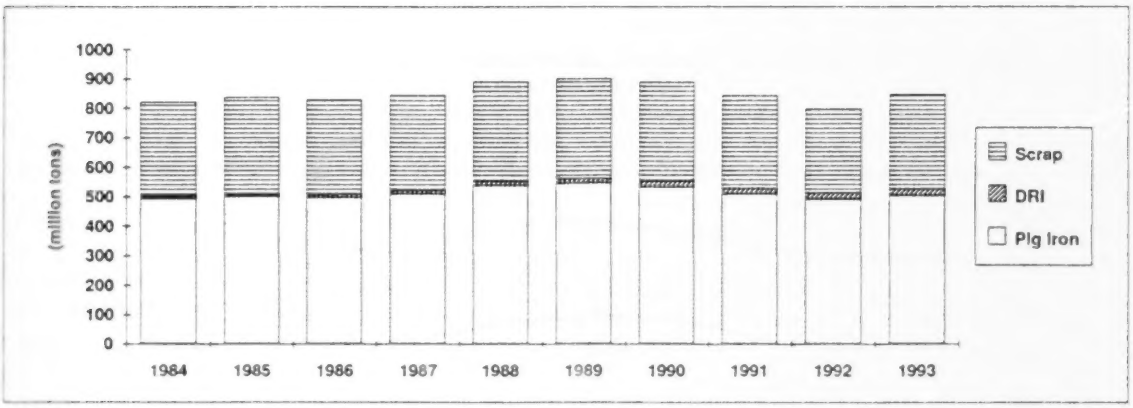


B. Ferrous metallics market

12. Soaring prices for prime grade ferrous scrap reached all-time record levels in 1993, reviving interest for primary iron products. The role of mini-mills in world steelmaking is growing fast, and more than 30 per cent of world crude steel was made in electric arc furnaces in 1993[2]. Nevertheless, whatever is the steelmaking process chosen, high quality iron units are nowadays essential for the production of high quality steel. As the supply of good quality scrap at reasonable prices became scarce throughout 1993, demand for scrap substitutes was high. Not only the consumption of direct reduced iron (DRI) and/or hot-briquetted iron (HBI) increased last year but the use of cold pig iron was higher as well, even in electric furnaces[3]. However, given the limited availability of these products in the world market, exporters of primary iron products were unable to take full advantage of the strong market conditions which prevailed in 1993.

13. **Pig iron :** More than 500 million tons of pig iron were produced and consumed by the world steel industry in 1993. According to estimates some 10 million tons of cold pig iron were traded worldwide, mainly to meet the increasing demand from East Asia. The Russian Federation, Ukraine and Brazil remain the main world suppliers. However, there were some distabilizing factors for the pig iron supply to world markets: (i) the increased costs of pig iron production in Russian Federation and Ukraine due to energy shortages and transportation problems; (ii) the reduced level of charcoal pig iron produced in Brazil since stricter local reforestation laws caused the closure of several pig iron plants; and (iii) the imposition of anti-dumping duties on pig iron imports into the EU market[4].

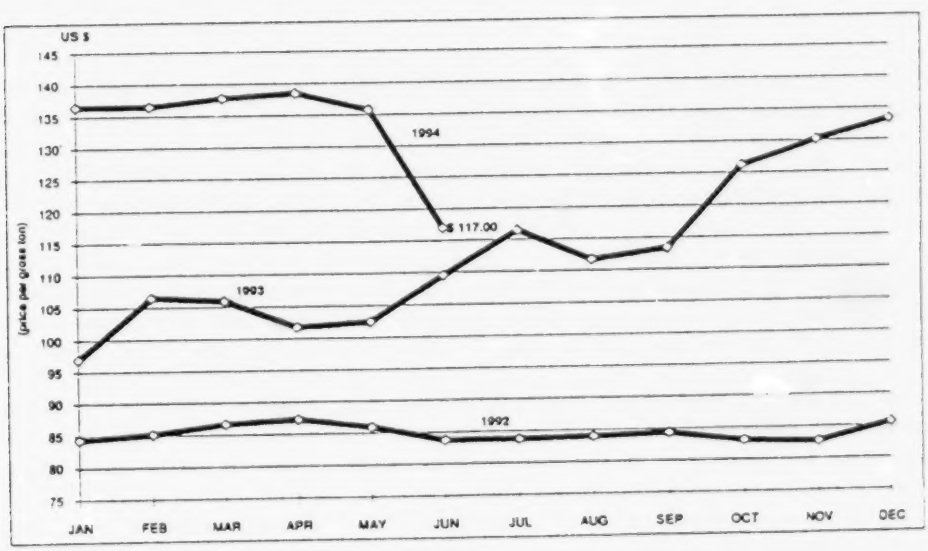
Chart II: World demand for ferrous metallics
(million tons)



14. **Direct Reduced Iron (DRI)** : The DRI market continued its upswing in 1993. After its average annual growth of 10 per cent over the last ten years (1982-1992), world production of direct reduced iron reached a new record exceeding 24 million tons in 1993, more than 15 per cent higher than in 1992. About 35 million tons of iron ore is presently consumed in DRI plants. DRI usage is growing, whether to complement or to substitute scrap not only in electric but also in some blast furnaces, particularly in scrap deficient regions. New DRI plants started production last year in India, Indonesia, Iran and Malaysia. World trade of DRI/HBI also made a big jump, exceeding 5 million tons for the first time in 1993, i.e., an increase by 40 per cent from the year before. Noteworthy is that while in the past DRI prices followed quite closely the average No.1 heavy melting scrap prices, in 1993 they remained stable and did not follow the escalating scrap prices which rose by up to 40 per cent during the year.

15. **Ferrous scrap** : The rebound of scrap-intensive mini-mills in the United States, and the growing number of electric steelmakers in South-East Asia, made 1993 one of the strongest years for the ferrous scrap market which benefitted from the combination of strong demand and record prices. The recession in industrialized countries was the main cause of the sharp upturn of the scrap market in 1993, since it delayed the replacement of durable goods, reducing the volume of scrap generation. As concerns over shortages of quality scrap spread, the search for long-term solutions to minimize the impact of sudden rises of scrap prices on the operational costs of electric steelworks has intensified. It was striking that scrap prices could remain high for such a long period, in a market known as one of the most volatile commodity markets. Scrap prices started falling only in May 1994.

Chart III: Evolution of ferrous scrap prices



Source: American Metal Market

♦ *Average monthly composite price for No. 1 heavy melting steel scrap*

16. Ferrous scrap trade rose considerably in 1993. The United States, the major world supplier, exported more than 10 million tons in 1993, 6.5 per cent more than in 1992. The strongest increases in scrap imports occurred in the Republic of Korea and China, while Italy, Turkey and Spain remained key destinations. At a time when ferrous scrap trade has been intense, big uncertainties arose about the effects of the forthcoming implementation of the Basel Convention[5]. If a consensus is not reached regarding the definition of "waste", ferrous scrap trade may be restricted in the near future.

C. Iron ore stocks

17. As global iron ore demand remained stronger than expected throughout the year, stocks of most exporters were sharply reduced by the end of 1993 largely due to the big tonnages shipped to China and South-East Asia. This also reflected the fact that despite pessimistic projections, Japan effectively imported its annual contracted volumes in 1993 and ended the calendar year with its usual stocks of around 15 million tons. As the pace of shipments inside North America and to the Middle East accelerated, a supply shortage for lumps and pellets became noticeable. Surprisingly, however, contrary to the situation prevailing at the end of 1992 when high stocks triggered lower prices for 1993, the reverse has not happened in the subsequent year since the low levels of stocks have not prevented a further fall in prices negotiated at the end of 1993 for deliveries in 1994.

III. FACTORS INFLUENCING IRON ORE SUPPLY

18. World production of iron ore increased in 1993, recovering from the downturn of 1992. Mining activities picked-up in most major iron ore producing countries and world output totalled 942 million tons, about 2.5 per cent higher than the previous year. The most efficient mines operated close to capacity levels in 1993. Most pellet producers were over-booked. Worldwide, the rate of capacity utilization of the iron ore industry improved last year. Export-oriented producers adjusted their production plans upward, following positive market signals particularly from Asia and North America. Again the strongest increase in iron ore output took place in China, while the sharpest drop was in the CIS where iron ore output had been falling drastically over the last five years.

19. However, given the gradual exhaustion of high grade direct-shipping ores, a great number of low grade ore-bodies are now under exploitation worldwide. As a result, bigger volumes are mined but higher quantities of ores need upgrading. Measured in Fe content, world output amounted to 525 million tons in 1993, but the world average Fe content slightly declined to 55.7 per cent Fe, although this has been compensated by wider use of advanced concentration and agglomeration techniques to meet the required metallurgical characteristics of marketable ores.

Table 3
Iron ore production by major producing countries, 1986-1993
(million tons, natural weight)

Country	1986	1989	1991	1992	1993	1993/1992 Change %
1. China*	140.6	162.1	175.3	195.9	224.7	14.7
2. Brazil	129.1	153.7	150.7	145.8	159.4	9.3
3. Former USSR	250.0	241.?	198.9	175.0	154.0	-12.0
4. Australia**	94.0	105.8	122.0	117.2	121.4	3.6
5. India	51.2	51.4	56.9	54.9	56.0	2.1
6. USA	39.4	57.9	55.5	54.9	55.7	1.4
7. Canada	36.7	41.1	37.1	34.4	32.3	-6.3
8. South Africa	24.5	30.0	29.0	28.2	29.4	4.1
9. Sweden	20.5	21.8	19.3	19.3	18.7	-2.8
10. Venezuela	16.2	18.0	20.0	18.1	17.5	-3.2
World Total	914.7	986.2	949.9	918.2	941.7	2.6

Source: UNCTAD secretariat
* low-grade
** dry basis until 1991

A. World market for agglomerated ores

Sinter

20. Owing to the rising of sintering costs as compared to the low-priced ready made pellets, a number of sinter plants in industrialized countries reduced their activities in 1993. A similar situation, although for other reasons, occurred in the CIS where sinter output was more than 20 millions tons lower On the other hand, China like Japan, is showing a preference for sinter and added 5 million tons of new capacity in 1993; Chinese annual sintering capacity now exceeds 120 million tons. Reflecting these developments, world sinter output totalled 494 million tons in 1993, and sinter remains the most used charge for blast furnaces.

21. Despite the successive falls in sinter-feed ores prices, sintering production costs considerably increased over the last five years given the growing pressure for the installation of anti-pollution equipment in old sinter plants. With the implementation of tighter environmental regulations, the modernization or close-down of old sinter plants became imperative in many countries.

Pellets

22. Since the second half of 1993, the market for pellets has been very active, and pellet exports approached 70 million tons in 1993. Demand was strong and most pellet exporters were over-committed, given the combination of larger shipments of blast furnace pellets to China and Europe, and the fast growth in sales of DR-pellets. Strikes for nearly two months in four pellet plants in the United States, which were followed by the subsequent idling of the National Steel Pellet

Co., affected pellet shipments in North America, making the world pellet supply situation even tighter. Severe winter conditions of early 1994 in North America also affected shipments, putting additional pressure on pellet exporters during the first half of 1994.

Table 4
World pellet exports, 1986-1993
(million tons)

Country	1986	1989	1991	1992	1993	1993/92 Change %
1. Brazil	22.3	23.3	24.0	21.3	23.0	8.0
2. Canada	17.5	17.3	14.4	13.3	12.9	-3.0
3. Former USSR	10.9	11.5	10.0	9.8	11.2	14.3
4. Sweden	6.3	6.5	6.4	6.7	7.5	11.9
5. United States	4.6	2.8	4.0	4.7	5.0	6.4
6. Chile	3.0	3.6	3.8	2.7	3.6	33.3
7. India	0.2	1.9	1.3	1.5	2.2	46.7
8. Venezuela	0.0	1.2	0.9	1.1	1.2	9.0
9. Peru	1.5	1.5	0.8	1.1	1.8	63.6
10. Norway	-	1.1	1.3	0.7	1.1	57.1
11. Australia	1.7	1.6	0.7	0.6	0.4	-33.3
12. Liberia	3.2	3.3	0	0	0	0
World Total	**71.1**	**74.9**	**67.7**	**63.8**	**69.9**	**9.6**

Source: UNCTAD secretariat

23. As a result, world pellet production and trade increased in 1993 by 3 per cent and almost 10 per cent respectively. Trade has grown faster than production mainly because in the CIS, exports were nearly 15 per cent higher while pellet production and consumption declined on account of to weak domestic demand. In the United States, 10 pellet plants were in operation in 1993 and fluxed pellets accounted for more than 40 per cent of the US production[6]. Brazil, the world's largest supplier, exported 23 million tons of pellets last year with its seven pelletizing plants running at full capacity. In Canada despite the higher sales to the US market, pellet output was reduced in 1993 in order to lower the level of stocks. In Sweden, the expansion of pelletizing capacity is under way as scheduled. Swedish pellet output in 1993 reached 10.5 million tons, of which 7.5 million were exported to world markets.

B. Regional developments

1. Africa

24. African iron ore production (including South Africa) was less than 45 million tons in 1993, compared to more than 60 million tons five years before. This decline sharply contrasted with the recent expansion of iron ore mining

activities in other developing regions. Moreover, given the limited degree of downstream processing in Africa, (less than 14 million tons of crude steel were produced in 1993), about 65 per cent of the ore produced in the continent is for exports. However, despite the recent worsening of social and economic conditions in the region, the African iron and steel industry has shown some progress. Over the last few years, some new integrated steelworks as well as few semi-integrated mini-mills were built, even if the capacity utilization of most African iron and steel plants remains very low.[7]

25. South Africa remains the major iron ore producer in Africa. In 1993, its iron ore output was 4 per cent higher than in 1992, exceeding 29 million tons and its exports rose to 19.5 million tons, more than 30 per cent higher than in 1992, thanks to the strong world demand for lump ores. Furthermore, given the recent capacity expansion of the Sishen mines, the new operations at the Thabayimbi deposits and the on-going improvements in transportation links, Iscor has been reinforcing its supply capabilities to both the domestic and the international markets.

26. In Mauritania, SNIM's ore production and exports recovered from the sharp decline of 1992, and 9.7 million tons of Mauritanian ores were sold to world markets in 1993[8]. As the Kedia and the Tazadit deposits approach exhaustion, new mining areas are being developed in the country. The M'Haoudat Project inaugurated in April 1994 will ensure the continued supply of high grade direct-shipping ores, with an annual production rate of 6 million tons for the next 20 years, of which 40 to 50 per cent of lumps. The next step will be the construction of a pellet plant to produce 5 million tons of DR-pellets to meet the requirements of the Arab countries.

27. In 1993, as the war was still going on, no iron ore was produced in Liberia, although small shipments were made from stocks. Mining operations ceased in November 1992 and may resume in the course of 1994, if the current UN peace initiative proves successful in putting an end to the war, and if the infrastructure has not been too much damaged and does not require too costly technical rehabilitation to make mining activities economically viable. According to the AMCL (African Mining Consortium of Liberia) about 3.5 million tons of iron ore could be produced in 1994. In Guinea negotiations to raise funds to develop the Mifergui Project continue, and apparently the environmental objections to the project have been surmounted since according to world experts the Nimba mining area is located outside the Nimba World Heritage Site[9]. In addition, Euronimba, a new equity holding multinational joint-venture involving French, Japanese and South African companies was recently set-up to define the best way to go ahead with the project. Senegal is also still seeking for concrete financial commitments from potential users and/or multilateral institutions to launch the Miferso Project.

2. Asia

28. About one third of all iron ore is currently produced in Asia. In 1993, China mined 225 million tons of low-grade ores, nearly 15 per cent more than the year before, strengthening its position as the world largest producer. Even if account is taken of the fact that only half of the Chinese iron ore reserves is minerable and 98 per cent are low-grade quality (less than 35 per cent Fe)[10], China iron ore production now accounts for 15 per cent of world total in Fe

content. As the Chinese iron ore output only covers about 70 per cent of China's needs, in parallel with the strong growth in ore imports, efforts are being made to modernize old mines, develop new projects locally and overseas, and to construct new deep water ports. Most of the rise in Chinese iron ore output in 1993 came from the Qian'an mining area - the largest in the country. Production at the Qidashan mines is also increasing and expected to double to 15 million tons by 1995. Developments at the Jianshan deposits will also provide additional ore tonnages in the near future.

29. India produced over 56 million tons of iron ore in 1993, and exported more than 30 million tons. Despite growing domestic demand, exports increased by more than 5 per cent in 1993 reflecting higher sales to China and Europe, particularly from Goan exporters. Chowgule Co., a major producer from the Goa region, inaugurated a new beneficiation plant in late 1993 after re-starting pelletizing operations the year before. New pelletizing capacity and the expansion of the Bailadila mining area are planned, but financial difficulties resulting from the fall of export prices and local transportation problems are delaying construction work. However, as India is now a net exporter of steel products, new DRI and pig iron plants are coming on stream substantially increasing the demand for locally produced high grade ores.

30. It is estimated that about 10 million tons of iron ore is presently produced in the Democratic People's Republic of Korea mainly for domestic consumption and some exports to China and Japan. The production of Thailand, Malaysia and the Republic of Korea together does not exceed 1 million ton. In Viet Nam no decision has been made regarding the exploitation of the Thach Khe deposits, since the current low level of iron ore prices puts into question the economic viability of this project. Pakistan is carrying out exploratory studies of several iron ore deposits mainly in the Nokundi area, with a view to assess the economic feasibility of mining and pelletizing iron ore in the country.

31. In West Asia the increase in iron ore output has taken place mainly in Islamic Republic of Iran, where more than 7 million tons were produced in 1993 following the start of operations at the Gol-e-Gohar mines, and the ongoing program for mining expansion. Turkey continues to produce about 5 million tons of iron ore annually to satisfy part of its own requirements. Saudi Arabia is considering the mining of its Wadi Sawawin deposits, and possibly the building of a pelletizing plant to produce DR-pellets.

3. Eastern Europe

32. In this region, total iron ore output was in 1993 almost 100 million tons below its level of 1988, reflecting the successive sharp falls in production of iron and steel in the CIS States. Given the sudden rise in prices of steel-related raw materials inside the CIS region, which now are close to world prices, operations of most steelworks have been affected by shortages of one or several of their main inputs such as iron ore, coke, energy and scrap. For instance, Russia's biggest iron ore beneficiation plant, Lebedinsk, with a capacity of 17 million tons of concentrates and 9 million tons of pellets, was temporarily closed last year owing to debts to fuel suppliers. This critical situation reflects the regional inter-dependence and the bottleneck in raw materials deliveries inside the CIS republics. Recently, agreements have been made between

steel producers and raw material suppliers to find solutions to these problems. The Russian-Kazakh agreement signed in early 1994 is an example which aims not only at ensuring Kazakh ore supplies to the Russian mills, but also at facilitating joint-financing of viable deposits.

33. In 1993, total iron ore production in the CIS was 154 million tons and as domestic consumption dropped sharply, larger surpluses went to exports which were 8.5 per cent higher than in 1992. In the Russian Federation, the restructuring program for the iron and steel sector made some progress. Iron ore mining capacity has been further reduced and some mines are being rehabilitated. However, in 1993 out of a total capacity of 100 million tons only 76 million tons of iron ore were produced in Russian Federation[11]. Nevertheless, production of concentrates at Stoilinsk is planned to rise from 12 to 16 million tons, as well as the output at Kachkanarsk mines from 42 to 45 million tons and new capacity at Yakowlevsky has been commissioned[12]. In Ukraine the disruption of energy supplies from other CIS States hit strongly the steel industry, affecting iron ore mining and pelletizing activities. Ukrainian iron ore output sharply dropped in 1993, and its ore supplies to Central European countries were also affected by the embargo on shipments crossing the territory of the former Yugoslavia. In Kazakhstan, iron ore output fell sharply given the cutdown in production of the Sokolovsko-Sarbaisky mines which were designed mostly for the supply of Russian steelworks. In other Eastern European countries iron ore production is marginal; their combined output at present is less than 1.5 million tons.

4. Rest of Europe

34. In the European Union iron ore mining has became less and less viable from the technical and economic point of view. Total EU output was cut by nearly 30 per cent in 1993 to around 6 million tons. The progressive closing-down of the French Lorraine's deposits continues and by this year the Arbed's mines might be the only remaining ones in operation. In Spain the operations of Cia. Andaluza de Minas presently runs around 2.5 million tons, and there is no more mining in the Vizcaya region.

35. Scandinavian countries produced 22 million tons of iron ore in 1993. In Sweden, LKAB produced 19 million tons, of which more than half of pellets; its expansion programme is underway and by 1995 with the planned start-up of the new concentration and pelletizing plants, LKAB will be able to produce annually up to 23 million tons. In Norway, three mines remain in operation and output in 1993 was around 2 million tons, of which some high grade magnetite ores for non-steelmaking uses. In Austria iron ore activities are being gradually reduced and current output is less than 1.5 million tons.

5. Latin America

36. In 1993, more than 20 per cent of world iron ore output were produced in Latin America. Given the recent surge of regional economies, local iron ore consumption also picked-up. Brazil produced a record level of nearly 160 million tons of iron ore last year, 9 per cent more than in 1992. This peak was prompted not only by the rise of exports but also by the need to supply its growing domestic steel industry. The CVRD Group (Cia Vale dc Rio Doce and its pellets

joint-ventures) produced 98 million tons of iron ore, of which nearly 70 million tons for the world market, thus remaining the world's largest iron ore exporting company. Shipments from its Carajas mines were close to 34 million tons and with the completion of its No.2 pier at Ponta da Madeira in March 1994, the annual loading capacity of the Carajas Project can now reach up to 50 million tons. The six pelletizing plants operated by CVRD with a total capacity of 18 million tons were also running at full capacity last year. In early 1994, CVRD announced the building of an agglomerating plant to transform the rejects from the Timbopeba mines into nearly 3 million tons of pellet feed".

37. Mineracoes Brasileiras Reunidas - MBR, the second largest iron ore miner in Brazil, produced 23 million tons of iron ore in 1993 and is finalizing the expansion of its Pico mine which, by mid-1994 will bring the company's total capacity to 27 million tons. MBR also intends, at a later stage, to replace the Aguas Claras mine by developing its Tamandua reserves. The three other major iron ore exporters in Brazil also reported higher ore shipments in 1993: Samarco exported nearly 8 million tons from its Germano/Alegria mines, of which more than 5 million tons of pellets. Ferteco supplied more than 10 million tons of ores and pellets in 1993, of which over 70 per cent to the world markets. Samitri completed its development program in early 1994 rising capacity to 9.5 million tons and, from now on, this company is able to offer a wider range of products, including pellet-feeds.

38. In Venezuela, total iron ore production decreased to 17.5 million tons in 1993, of which 35 per cent went to the domestic market. However, despite the nearly 30 per cent drop in Venezuelan iron ore exports since 1989, the expansion and mining efficiency program of CVG Ferrominera has progressed and the modernization of handling capacity at Puerto Ordaz is underway. In addition, following the rapid growth of DRI capacity in Venezuela, the world's largest DRI producing country, priority has been given to solve the problem of domestic pellet supply with the completion of a new pellet plant in 1994.

39. In Chile, iron ore output declined in 1993 to around 7 million tons, but exports were nearly 10 per cent higher. Cia Minera del Pacifico - CMP, the only large Chilean iron ore producer, decided to develop its Los Colorados mines to replace the depleting Algarrobo deposits by 1997; at the same time CMP is enhancing its pellet supplier position, since its Algarrobo plant is running at full capacity in 1994 to produce 4 million tons. In Peru iron ore mining activities are recovering fast after privatizations; output in 1993 exceeded 5 million tons, compared to less than 3 million in 1992, and the planned production for 1994 is 6.5 million tons, of which 3 million tons of pellets. About 8 million tons of iron ore continue to be produced annually in Mexico for domestic use. While in Argentina, following a change in ownership, operations at the Hipasam mine may resume after two years of stoppage.

6. North America

40. Despite the strengthening of the steel market in the United States, total output of the iron ore industry in North America declined by 1.5 per cent in 1993. In the United States iron ore output was maintained at the 55 million tons level, despite the strikes which affected summer production in the Great Lakes area and idled the mine and pellet plant of the National Steel Co., which the

year before produced 5 million tons of pellets. On the other hand, output was nearly 10 per cent higher at the Minntac plant of US Steel, and shipments exceeded 14 million tons of pellets in 1993[1]. Thanks to the sustained activity of major American integrated steelmills during the first quarter of 1994, Cleveland-Cliffs which manages five North American mines, was running at full capacity early this year and was planning to produce 35 million tons of iron ore in 1994.

41. In Canada the combined production of the four mines presently in operation was 32 million tons in 1993, about 2 million tons less than the year before owing to drawdowns of inventories. However, given to the firm demand for pellets, Canadian exports increased despite the lower level of production. IOC - Iron Ore Company shipped 13.5 million tons last year but its exports in 1994 may be affected by lower sales to Japan. Finally QCM, which slowed down its operations last year in order to reduce its stocks, is targetting to produce 14 million tons in 1994.

7. Oceania

42. Thanks to its dominant position in the Asian market, Australia was the world leading iron ore supplying country in 1993 with record levels of production and exports. Its total iron ore output exceeded 121 million tons last year, close to the peak level reached in 1991. At present, more than 90 per cent of Australian ores is mined at the Pilbara region in Western Australia, by three major companies which are consolidating their supplying capacity, namely: Hamersley Iron, BHP Iron Ore and Robe River. For the second consecutive year, Hamersley produced more than 50 million tons from its four mines including the Channar joint-venture. Its production capacity is presently 55 million tons, but with the start-up of the Marandoo Project (designed to produce 10 to 12 million tons annually) during the second half of 1994, Hamersley's supplying capacity will be increased, even if output from Marandooo will largely serve to prolong the life of Tom Price's deposits.

43. BHP Iron operates the Mt. Newman, the Goldsworthy and the Yandicoogina projects. It is investing to improve and expand its port loading annual capacity from 38 to 45 million tons. Production at Yandicoogina which started in 1992 with a capacity of 5 million tons, has been increased to 10 million tons in 1993. The development of the Yarrie project, which will partially replace the Shay Gap, was also approved last year and is expected to produce annually 5 million tons of lump ores for the coming six years. Robe River, the third major producer in Australia, started operations of its Mesa J deposit in July 1993 to replace some depleting deposits. It can now produce 27 million tons and ship more than 30 million tons annually. In addition, the 1.3 million tons of annual production by Savage River in Tasmania, initially planned to be mined out by September 1995, will be extended to December 1996.

44. In New Zealand, the Taharoa iron sand mine also operated by BHP, produced about 2.5 million tons in 1993, but a fire in the beneficiation plant caused a temporary suspension of operations in May 1994.

C. Investments, financing and privatizations

45. Despite the economic uncertainties of 1993 and the erosion of earnings caused by the drop of iron ore prices, the iron ore industry has generally maintained investment decisions taken earlier. Most companies reduced exploration expenditures and focused on cost reduction, new mining techniques and product quality. No new greenfield project took off in 1993. Instead, capacity expansions were underway where infrastructure and market channels already existed, reinforcing the position of major companies. Incremental projects are currently in execution in Australia, Brazil, Chile, China, India, Sweden and Venezuela. After account has been taken of the replacement of depleting mines, these projects may bring some 20 million tons of additional supply capacity within the next few years (see Annex I).

46. More liberal domestic policies have greatly contributed to the surge of private capital inflows in major minerals economies. China and South-East Asia are the driving forces behind the large investments currently under-way; either by attracting foreign investors or as partners in overseas mining joint-ventures. Different investment mechanisms were put in place in China to assure its iron ore needs; in addition to the joint-ventures with Australia and the acquisition of mines in Peru, China has recently negotiated joint-ventures with Brazil and South Africa. In India, the denationalization and expansion of the iron and steel sector is also offering more attractive returns for national and foreign private investors in iron ore mining. In Latin America, privatizations and easing of restrictions on foreign ownership of mining operations are proving successful in attracting international investors[15], including to the iron ore industry.

47. In the CIS disinvestment in the iron and steel sector continued in 1993, even if 75 per cent of the CIS metallurgical plants have been recently privatized. From the commercial point of view, several deposits at present under exploitation may not be economically viable and investments are therefore urgently needed to modernize economically viable mines. The World Bank and the European Bank for Reconstruction and Development (EBRD) started to set-up more flexible financing instruments, but political and economic instability has been dissuasive for commercial lending and private initiative. The non-convertibility of the CIS and Eastern European's currencies is another barrier to foreign investment. Counter-trade is still largely used, particularly for the acquisition of technology and financing of mining equipment and plants[16].

48. In Africa, geological surveys and prospection of potential iron ore deposits have been undertaken, but given the critical political and economic difficulties in the continent, it has been difficult to mobilize risk capital and development funds for long-term mining investments. This situation may be aggravated by the forthcoming end of the ECSC Treaty, (European Community for Steel and Coal), since apparently no more funding from the European Union will be made available for new iron ore projects.[17] On the other hand, there are expectations that recent political changes in South Africa - one of the world's leading mineral suppliers - may bring opportunities for increased regional mining co-operation in the continent.

IV. TRADE IN IRON ORE

49. Thanks to the rapid acceleration of steel demand in China and the emerging economies of Asia, world trade in iron ore increased significantly in 1993. World exports of iron ore reached 398 million tons, about 8 per cent more than in 1992. All major exporting countries benefitted from this increase in export volumes. This trade upturn was the result of: (i) the sharp rise of over 30 per cent in Chinese iron ore imports which peaked to 33 million tons in 1993, more than double their 1990 level; (ii) the sustained growth of iron ore imports by 12 per cent in the Republic of Korea and by nearly 25 per cent in the Taiwan province of China; (iii) the failure of the anticipated decline in import demand in Japan to materialise, and (iv) the fact that, in 1993, iron ore imports declined only in the EU.

Table 5
Major iron ore trade partners - 1990,1993

Major Exporters	Share (%) of world exports		Major Importers	Share (%) of world imports	
	1993	1990		1993	1990
1. Australia	29.2	24.3	1. Japan	29.8	31.5
2. Brazil	28.1	28.9	2. Rep. of Korea	9.3	5.6
3. India	7.5	8.0	3. Germany	9.2	11.0
4. CIS	7.4	9.2	4. China	8.6	3.6
5. Canada	6.6	6.8	5. Italy	4.4	4.3
6. South Africa	4.9	4.3	6. France	4.3	4.7
7. Sweden	4.1	4.2	7. United Kingdom	4.1	3.7
8. Venezuela	2.6	3.5	8. United States	3.6	4.5
9. Mauritania	2.4	2.9	9. Czechoslovakia (former)	3.4	3.6
10. Chile	1.6	1.7	10. Belgium/Lux.	3.3	5.1

Source: UNCTAD secretariat.

50. Iron ore remains the most traded non-energy commodity, in terms of value and volume in world mineral trade. In 1993, world trade in iron ore amounted to 7.55 billion US dollars, the lowest value since 1989. While importers benefitted from a lower average import value [18], most exporters experienced falls in export earnings despite the increase in shipped volumes. Larger quantities were insufficient to offset the losses owing to falling prices[19]. However, exchange rates movements continue to play a major role in the profitability of individual companies.

51. Japan still accounts for about 30 per cent of world iron ore imports, despite the recent slowing-down of steel activities. It is now followed by the Republic of Korea which moved up fast over the last five years and at present imports slightly more than Germany. Also striking, is the case of China, which

was at the 10th place in 1990, and at present ranks 4th among the largest iron ore importing countries with about 8.5 per cent of world imports. From Eastern Europe came the first signs of a stabilizing market since iron ore demand started recovering, although iron ore imports in this region were 28 million tons in 1993 compared to nearly 58 million in 1987.

Table 6
Iron ore exports by major exporting countries, 1986-1993
(million tons)

Country	1986	1989	1991	1992	1993	1993/1992 Change %
1. Australia	79.7	104.5	111.5	106.6	116.5	9.2
2. Brazil	92.3	111.6	114.7	106.0	111.9	5.5
3. India	28.1	33.5	31.2	28.5	30.0	5.4
4. CIS	46.2	39.9	27.4	27.0	29.3	8.5
5. Canada	30.1	30.2	29.7	25.1	26.1	4.0
6. South Africa	8.8	14.6	15.5	14.9	19.6	31.5
7. Sweden	17.1	17.5	15.5	15.5	16.4	6.1
8. Venezuela	10.0	14.4	13.4	10.2	10.5	2.2
9. Mauritania	8.9	11.1	10.0	8.0	9.7	21.0
10. Chile	4.8	7.4	7.4	5.7	6.3	9.5
World Total	**364.5**	**420.4**	**398.2**	**369.7**	**398.1**	**7.7**

Source: UNCTAD secretariat.

V. IRON ORE PRICES

52. Weak market conditions in 1992 led to sharp drops in iron ore prices for 1993. The first price settlement was reached in late December 1992 in Europe, unexpectedly by SNIM from Mauritania and Sollac (Usinor group) from France, cutting FOB prices by 12 to 15 per cent for Mauritania's ores. Deducting freight rate differentials, this benchmark was also applied to CVRD's ores, lowering world reference prices for 1993 by 11 per cent for fines and 10 per cent for pellets. Similar prices were agreed upon in Japan, and the price linkage between the two major markets was maintained, taking into account distinct ore qualities and the freight-sharing policy. For lump ores, prices fell by 9 per cent in Japan and 12 per cent in Europe keeping the premium rate unchanged. World prices for DR-pellets also declined by 10 per cent in 1993 despite the more favorable market conditions. In summary, iron ore nominal prices in 1993 were back to the level of 1981.

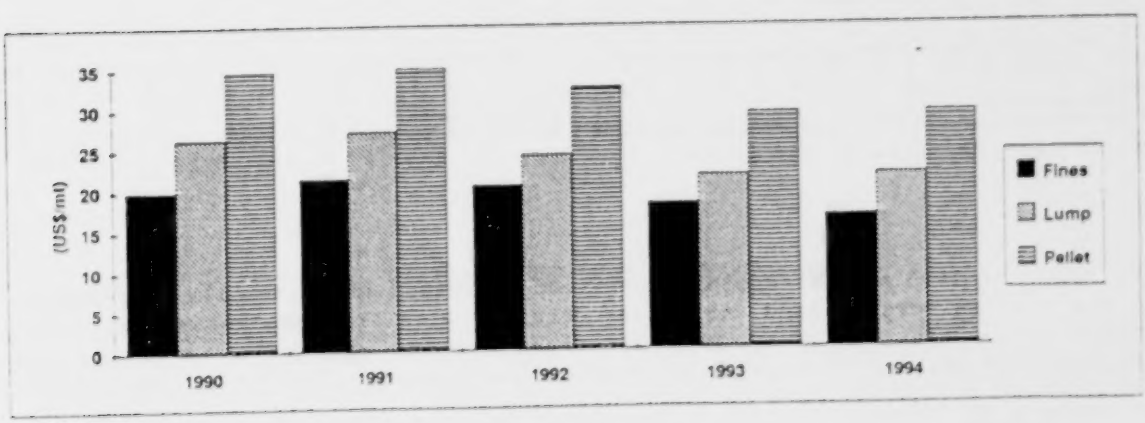
53. For 1994, challenging market fundamentals, iron ore prices fell further. Despite visible signs of tighter supply for most products by the end of 1993, lower stocks and better prospects for 1994, competition among suppliers once again favoured iron ore buyers. In a tense price-setting season, the first agreement reached in February 1994 between Hamersley Iron from Australia and the group of Japanese integrated steelmakers, led to a drop of 9.5 per cent for fines

and nearly 6 per cent for lumps. This outcome set the 1994 reference price level for iron ore, which for some brands is now more than 30 per cent below the 1991 level.

54. Even in the case of pellets for which the supply shortage was evident, sellers had not succeeded to take advantage of the tight market conditions of early 1994 to improve prices. The first negotiation conducted by LKAB from Sweden with the German steel mills resulted in a marginal price reduction. However, Brazilian pellet exporters, the largest supplier, refused to accept a price cut insisting that pellet prices should, at least, remain unchanged. This made the 1994 price negotiations one of the toughest-ever, because only by the end of May an agreement was reached to keep pellets prices unchanged in both the European and Japanese markets. Indeed, the only rewarding note for iron ore miners in 1994 was the firmness of the DRI market which contributed to raise the premiums for pellets and lumps.

55. Once again, in order to alleviate their financial losses, major steelmills exerted strong pressure for a further drop of iron ore prices, and the leading iron ore price setters were willing to compromise the level of prices in exchange for market shares. While in 1993 weaker market conditions and lower sales justified a less aggressive pricing policy, the result of the 1994 price negotiations did not reflect the evolution of the supply/demand situation. On the contrary, it underlined the weak bargaining position of iron ore sellers vis-a-vis the strong market power of grouped buyers. Individual iron ore producers - whether small, such as was the case in 1993, or one of the biggest as in 1994 - continue to be overwhelmingly concerned about the need not to lose export volumes in the shrinking traditional markets. Meanwhile, the role of new market players like the Republic of Korea and China is being strengthened on the iron ore world scene. Gradually, this may weaken the dominance of traditional price-leaders in annual price negotiations.

Chart IV - Iron ore world prices
(FOB, dry basis)

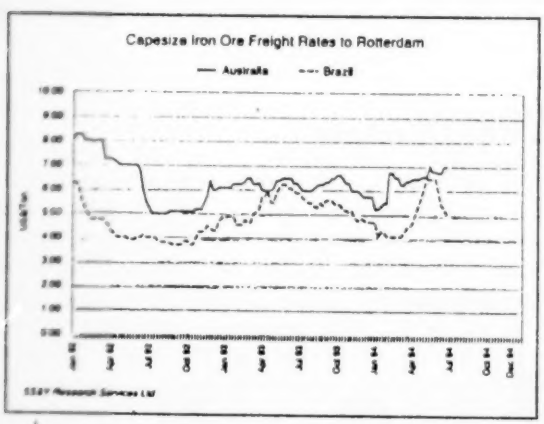


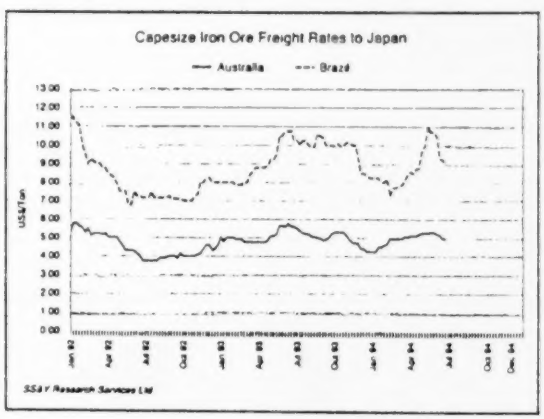
VI. TRANSPORT COSTS AND FREIGHT RATES

56. The sudden surge in China's steel and iron ore demand had a strong impact on international freight rates which increased in 1993. In addition, the resulting port congestions in China and in supplying countries affected movements of the dry bulk market in general. This situation seems to indicate that the importance of Japan as the largest generator of seaborne dry cargo trade may diminish in the long run, due to growing trade flows into China and other Asian countries.[20] To a lesser extent, greater mineral trade transactions in the CIS have been also influencing the chartering market. As a result, many export loading ports experienced difficulties in handling a busy schedule of shipments, particularly during the second half of the year.

57. Apart from the seasonal volatility of the freight market, rates for iron ore cargoes increased significantly in 1993 especially for Capesize bulkers and very large cargoes (VLCCs). Important fluctuations, however, occurred during the first half of 1994 when iron ore rates fell considerably in February but already in May soared by more than 30 per cent reflecting the rise of South American grain shipments. As dry cargo trade is expected to remain strong this year, iron ore freight rates are likely to remain high for the remaining of 1994, although the net growth in the capesize fleet foreseen for this year may be translated into another swing on rates.

Chart V: Iron Ore Freight Rates





58. While in 1993 ship scrapping demolition increased substantially in response to the rise in scrap demand, no losses occurred with iron ore vessels in 1993. However, the first half of 1994 witnessed serious accidents involving ore cargoes[21], as well as a reduction in combined carrier capacity due to demolition.

VII. TECHNOLOGICAL AND ENVIRONMENTAL ISSUES

59. Innovative mining and mineral processing systems, automation, waste management technology, and miner health and safety are the main research areas in which the iron ore industry is currently involved. New air pollution control measures are also being developed, in particular to reduce the NOx (nitrogen oxides) emissions from iron ore pelletizing operations[22].

60. Recent technical advances are, however, linked to product quality. Cost reduction and production of the highest-quality ores meeting world standards are today the top priorities for those iron ore companies wishing to remain competitive[23]. The "total quality" strategy has become a goal, towards the meeting of for which a number of mining companies are investing significant financial and human resources. It consists of a management program to monitor quality continuously aiming at full satisfaction of customers's expectations[24]. In 1991 the Iron Ore Company of Canada - IOC, was the pioneer in obtaining a quality standard certificate of the ISO 9000 series from the International Organization for Standardization. In 1993, Companhia Vale do Rio Doce - CVRD from Brazil was certified with the ISO 9002, assuring high quality standards and reliability for its products. Evidences of higher quality products have been confirmed in recent reports from the Japanese Steel Raw Materials Investigation Committee[25], indicating significant improvements in the ship-to-ship quality variation of most iron ore brands, in particular as regards size classification, and the average content of Fe (iron), SiO2 (silica), Al2O3 (alumina), and P (phosphorus).

61. Side by side with the steel industry, iron ore miners are also following closely the introduction of new technologies allowing for more economical, flexible and environmentally-friendly options for iron and steelmaking, and in particular their implications for future iron ore demand. New events in this area include: (i) Nucor Steel is finalizing the construction of the first commercial iron carbide (Fe3 C) plant with a capacity of 320 thousand tons in Trinidad and Tobago, which is expected to start operations during the second half of 1994 and to feed Nucor's minimills in the United States. Feasibility studies are being undertaken in five countries endowed with natural-gas namely Australia, China, Malaysia, Brunei and Indonesia which may become producers of iron carbide. (ii) the HIsmelt pilot plant became operational in late 1993 in Australia, and tests are being carried out with a view to defining the best size for its future commercial plant. (iii) the pilot plant of the DIOS (direct iron ore smelting) process developed in Japan also started experimental operations at NKK Keihin Works in early 1994, and tests will continue until 1996 to investigate the plant's technical viability and economic potential. In addition to the elimination of sintering and coking stages, the common feature of all three new ironmaking technologies is that they will use cheaper and widely available fines iron ores.

VIII - SHORT-TERM OUTLOOK

62. As predicted in the earlier UNCTAD report, the world iron ore market remained strong during the first half of 1994. This situation is expected to prevail throughout the year, since declines in exports to Japan are unlikely to be as sharp as indicated by earlier forecasts, and import demand is growing in all other regions. However, given the third consecutive year of sharp drop in

iron ore prices, the profitability of the iron ore industry continues to be threatened, in particular in the case of high-cost producers.

63. The first semester of 1994 has clearly shown a business recovery in developed market-economy countries. Pushed by lower interest rates and a cyclical resumption of investments, consumer's confidence is being restored. This upturn is stimulating major steel-consuming sectors and pushing up iron ore demand. Only in Japan did domestic demand remain weak during the first quarter but, by June 1994, it was already picking up. The Japanese steel sector was doing better than expected thanks to the sustained growth in steel exports, and so far the decline of its iron ore imports in 1994 was less than 2 per cent.

64. China became the joint largest steel producer alongside Japan in the first half of 1994, producing 7 per cent more crude steel than during the same period in 1993; Chinese iron ore imports during the first quarter of 1994 rose by nearly 25 per cent and the rapid progress in port facilities will favour larger iron ore shipments to China. Excluding the CIS and Africa, world crude steel production is increasing in all regions. In the OECD area, steel demand is expected to increase by 2.5 per cent in 1994, and in developing countries steel output was already 5 per cent higher by mid-1994[26]. Primary iron output also rose during the first half of the year, although it may be negatively affected if the sharp drop in ferrous scrap prices which started in May 1994 continues.

65. 1995 will probably see another upsurge in the steel market reflecting higher steel demand in Europe and Japan and the steady growth in China and other developing countries. It is also expected that higher steel prices together with higher operating rates will reduce operating losses of the steel industry[27]. This more positive environment augurs well for the world iron ore market.

Notes

1. See: "The world iron ore market: issues and challenges of the 90s" paper presented by E. dos Santos-Duisenberg at the 67th Annual Meeting, Minnesota Section of the Society for Mining, Metallurgy & Exploration, Duluth, United States, January 1994

2. According to the annual survey carried out by the International Iron & Steel Institute, the share of EAF (electric arc furnaces) in steelmaking was 31 per cent in 1993, against 59 per cent for BOF (blast oxygen furnaces) and 9 per cent for OHF (open heart furnaces).

3. The use of pig iron in electric furnaces is limited because of its high carbon content.

4. See: "EC curbs pig imports" by Metal Bulletin, January 20, 1994 and "Imports of iron from 4 nations given EC duty" by American Metal Market, January 20, 1994.

5. The second Conference of the Basel Convention, held in March 1994 in Geneva, called for a ban on transboundary movements of hazardous wastes from developed to developing countries, being for final disposal or for recycling operations.

6. According to the report of the U.S.Bureau of Mines prepared by W. Kirk, and published by the Skillings Mining Review on January 22, 1993.

7. Reference is made to a recent survey made by the UN Economic Commission for Africa, on "The African iron and steel industry", published in Vol.20 of Ironmaking and Steelmaking, 1993.

8. As reported in the January 1994 issue of SNIM News.

9. See: "Nimba ruled outside world heritage site" article in Metal Bulletin of July 12, 1993.

10. Reference is made to the paper presented by Mr. D.Zhi Xiong, Vice-President of China Metallurgical Import & Export Corp. at the 1993 session of the Intergovernmental Group of Experts on Iron Ore, Geneva

11. According to the figures provided by the Committee on Metallurgy of the Russian Federation in April 1994.

12. See: The Steel Market in 1992, United Nations Economic Commission for Europe, Geneva, October 1993

13. Information provided in the "Jornal da Vale", January 1994

14. As reported in the Skillings Mining Review, January 8, 1994

15. According to the Project Survey published by the Engineering & Mining Journal - E&MJ in January 1993, Latin America increased its share of reported global project investment funding to 28 per cent. Chile, Brazil, Peru and Mexico were the main beneficiaries.

16. See: "Mining in the CIS : Commercial Opportunities Abound", published by Financial Times Management Report, London, 1993.

17. See: "The European Community's iron ore supply: yesterday, today and tomorrow", by W. Deutzmann, Head of the Steel Raw Materials Unit of the European Economic Commission. Paper presented at the 1993 session of the UNCTAD's Intergovernmental Group of Experts on Iron Ore, Geneva.

18. Data from the Ministry of Finance of Japan, show that the import value (on CIF basis) for Japanese iron ore imports was more than 5% lower in US dollars terms, and 16.4 per cent lower on a yen basis as compared to the value of 1992, even if the volume of imports was 0.7 per cent higher in 1993.

19. In Brazil, for instance, while iron ore exports increased by 5.5 per cent in 1993, export earnings in dollar terms declined from US$ 2,30 billion in 1992 to 2,18 billion in 1993. Iron ore remains the most important commodity for the Brazilian trade balance accounting for 6 per cent of total Brazilian exports.

20. See: "Monthly Shipping Review" published by SS&Y Research Services Ltd, London, September and December 1993 issues.

21. Reference is made to reports by Clarkson Research Studies Limited, namely the May 1994 issue of "Large Bulkcarrier Report" and the "Shipping Review and Outlook", Spring 1994.

22. In the United States, the U.S. Bureau of Mines is investigating where and why high levels of NOx (nitrogen oxides) are formed during iron ore pellet firing operations and developing methods for decreasing the NOx emissions.

23. See: "The price of stability" by T. Moore, Chairman and Chief Executive Officer of Cleveland-Cliffs Inc. Keynote address at 67th annual Minnesota Section SME Meeting, USA, January 1994

24. See: "Total quality strategic planing" based on a report by Coopers & Lybrand mining consultants, published by the Mining Journal, London, November 27, 1992.

25. According to the articles published by the Tex Report, on March 31 and April 1st, 1994, Tokyo.

26. According to the May 1994 figures of the world monthly steel statistics, published by the International Iron and Steel Institute.

27. See: OECD Press Release, Steel Committee, April 1994, and "Global Steelmaking: supply/demand outlook" by World Steel Dynamics, Paine Webber, May 1994.

Annex I
IRON ORE MINING PROJECTS : NEW MINES AND CAPACITY EXPANSIONS - 1994

Company	Location	Planned capacity	Investment ($ million)	Start	Notes
AFRICA					
SNIM	El Aouj, Mauritania	11 MM mt/yr ore and 5 MM mt/yr pellets	750	?	Feasibility studies
MIFERGUI	Nimba Mts. Guinea	6-9 MM mt/yr ore	220	?	Seeking financing
MIFERSO	Faleme, Senegal	6-10 MM mt/yr ore	620	?	Seeking financing (includes railroad and port facilities)
ASIA					
Ansham Iron & Steel	Qidasham, China	16 MM mt/yr ore	440	1995	Double capacity from 8 to 16 MM mt
Taiywan Iron & Steel	Jianshan, China	?	?	1995/1996	Expanding capacity
National Mineral Dev. Corp.	Deposits No. 5, 11 and 14, Bailadila, India	5 MM mt/yr ore	?	1994/95	Expanding capacity from 9 to 13 MM mt
	Deposits No. 10, 11-A and 11-B, Bailadila, India	8 MM mt/yr ore	?	1997/98	Work in progress for capacity expansion from 13 to 22 MM mt
Kudremukh Iron	Mangalore, India	3 MM mt/yr pellets	?	1990s	Planned pelletizing expansion from 3 to 6 MM mt
MIDDLE-EAST					
Central Iranian Iron Ore Company	Bafgh, Iran	3 MM mt/yr concentrates	450	1995	Expansion program
Nisco Company	Chador Malu, Iran	5 MM mt/yr	600	1996	New project to supply Mobarake steel
Turkish Iron & Steel	Divos, Turkey	0.4 MM mt/yr	3	1996	Expanding pellet capacity
SOUTH AMERICA					
CVG Ferrominera	Porto Ordaz, Venezuela	6 MM mt/yr. ore	88	1995	Expanding and modernizing mines and plants
	Porto Ordaz, Venezuela	4 MM mt/yr concentrates	83	1998	
	Porto Ordaz, Venezuela	3.3 MM mt/yr. pellets	276	1994	New pelletizing
CMP- Romeral	Los Colarodos, Chile	1 MM mt/yr pellet feed	?	1994	Expand mining capacity for pelletization
	Los Colarodos, Chile	new deposits	180	1995/98	Feasability studies for replacement
MBR	Pico,Minas Gerais, Brazil	From 3.5 to 7 MM mt/yr ore	274	1994	Expanding capacity from 24 to 27 MM mt/yr
AUSTRALIA					
BHP Iron Ore	Mining area C	3 MM mt/yr lumps	?	1990s	Developments will occur when
	Yarrie	5 MM mt/yr lump fines	?	1990s	dictated by market demand
	M. Wahleback	10 MM mt/yr lump fines	?	1990s	
	Yandi	2 MM mt/yr fines	?	1990s	
Hamersley Iron	Channar, Pilbara	5 MM mt/yr ore	?	1998	Expanding capacity form 5 to 10 MM mt/yr for China
	Marando Pilbara	12 MM mt/yr. ore	300	1994	New mine to extend and replace Tom Price deposits
Portman Resources	Koolyanobbing	1.5 - 2 MM mt/yr. ore	15	1994	New project: lump/fines
	Cockatoo Island	0.6 MM mt/yr	5.5	1994	New project: fines
EUROPE					
LKAB	Kiruna, Sweden	2 MM mt/yr ore	315	1996	Extending capacity from 13-16 MM mt/yr
	Kiruna, Sweden	4 MM mt/yr pellets	285	1995	New pellet plant

Source: UNCTAD Secretariat based on the work of the Intergovernmental Group of Experts on Iron Ore

Notes: The information provided is not exhaustive; additional information and-or revisions are welcome

MM = million M = thousand mt= metric ton

Annex II
IRON ORE MINING PROJECTS : CLOSURES AND CAPACITY REDUCTIONS, 1993-1994

Company	Location	Reduction of of capacity	Effective or planned date	Temp (T) Perm (P)	Notes
AFRICA					
LIMINCO	Yekepa, Liberia	closed (from 2 MM to 0)	since 1992	T?	No operations in 1993
Bong Mining	Yekepa, Liberia	closed (from 6MM to O	since 1992	P?	Damaged mining and pelletizing facilities
Buchwa Iron Mining	Redcliff, Zimbabwe	close-down (100%)	Jan.94	T	Blast furnace being refurnished
CENTRAL AMERICA					
National Steel	Minnesota, USA	4.75 MM mt/yr	Aug.93	T?	Plant idled following expiration of labour contract
Las Encinas	Colina, Mexico	1.2 MM mt/yr pellets	1994	P	Depletion of reserves
EUROPE					
Usinor, Lovminos	Lorraine, France	3 MM mt/yr	1994	P	Not economically viable
OCEANIA					
BHP Iron ore	Koland Island, Australia	2.9 MM mt/yr ore	1994	P	Depletion of reserves

Source: UNCTAD secretariat based on the work of the Intergovernmental Group of Expert on Iron Ore

Notes: The information provided is not exhaustive; additional information and/or revisions are welcome

MM = million; mt = metric ton

T= temporary; P= permanent